

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Additional Remarks on Dynamoscopy. By J. M. F. GASTON, M. D., of Columbia, S. C.*

In illustration of the view, that the sounds which fall within the province of dynamoscopy result from the passage of the blood through the capillaries, I have examined three cases of paralysis of the arm of dissimilar origin and very difficult in their character. One was the result of an apoplectic seizure, in which hemiplegia ensued, leaving the circulation in an almost normal condition, while motion and sensibility were extinct in the left superior extremity. In this case there was no muscular contraction of any kind whatever, and yet the sound was very distinct at the end of the finger of that hand. This would lead to the inference that the circulation was the source of the sound, and as it is known that the vitality of a limb is not materially lessened by paralysis of this kind, it is plain that a nervous function must be extended to the circulation even when motion and sensation are lost, and this belongs to the original system of nerves which is more immediately related to the power of the organization respecting which this new inquiry is concerned.

The second case which has been under observation, is one of long standing paralysis connected with some rheumatic features in the subject. Partial hemiplegia of the left side, involving both the leg and arm, has been present for a number of years, and the left arm hangs useless at the side, though there is sensibility in the limb. In this case there does not seem to be any material deviation from the standard of healthy action in the circulation, and yet I suppose the long continuance of this inert condition, with contraction of the tendons of the fingers, would manifest less evidence of capillary action. My anticipation was to some extent realized, and yet the sound was entirely perceptible in the fingers of the affected limb, indicating that the flow of blood was sufficient to give this sign of vital action in the part. Had the sound depended on muscular action, we could not have expected it to be heard in such a case as this, when no evidence of the muscular contractility had been present for so long a period.

The third instance to which I wish to draw attention is one of so much interest within itself, that I will give a more detailed account of the circumstances of its origin and progress. It was a local paralysis of the left arm without any general impairment of the physical organization, in which all power and sensibility were extinct, and in which at the outset there was no evidence of pulsation in the arterial trunk or branches which supply the circulation to the limb.

On the 20th of April, 1857, I was called to this subject, who was a negro man of robust frame, engaged on the railroad near Columbia. He had been crushed by a bank of earth, which lay upon him, with his arm beneath his body, for a considerable time. He was excavated in an almost suffocated

* This addition to Dr. Gaston's paper in the present No. (see p. 360) was received too late to be inserted in its proper place.—ED.

state, and brought to the city, when I discovered that no motion, sensibility, or pulsation was present in the limb; and indeed it was necessary during that night and next day to resort to artificial means to promote the flow of blood from the veins, and thus invite the supply by the arteries as there appeared to be a degree of stagnation in the circulation incompatible with the life of the part. The cause of this suspension of pulsation must be involved in some degree of obscurity, but the solution of it may throw some light on the important subject of the arterial action, in the causation of the pulse, and hence it is proper to investigate closely every point connected with it. To make the case understood it may be stated here that the absence of pulsation was a characteristic feature of the limb for several weeks. Why was no pulse to be detected while the blood evidently did find its way slowly through the arteries into the veins? Had the artery been compressed so as to agglutinate its sides, the blood could not have passed; or if a clot had formed in the trunk from the protracted pressure at the axilla, no flow of blood through the vessel would have followed. Or if we suppose that the channel of the vessel was reduced very much at the point of pressure, can it follow that the small column which is transmitted should not have the pulsation imparted to it? This view seems the most available for explanation of any, looking to the direct injury to the arterial trunk; and yet it is not favoured by analogy of suspension of pulsation under partial occlusion of the trunk of an artery, nor was the diminution of flow so great as to induce the conclusion that any considerable obstruction existed.

The explanation which appears to me most plausible and satisfactory, refers the difficulty to the local injury of the nervous supply of the limb, from the long continued impaction of the members under the weight of the mass of earth which covered the patient. The head of the humerus was turned forwards and inwards so as perhaps to be pressed out of the glenoid cavity of the scapula for the time, owing to the pressure, of which there was ample evidence, in the posterior aspect of the shoulder. The nerves were compressed between the head of the humerus and the clavicle or upper ribs to an extreme degree, and hence undoubtedly resulted the paralysis of motion and sensation. Is it not then unphilosophical to infer that the organic nerves which go to keep up the pulsation of the arterial circulation were affected in like manner, and that the absence of the pulse followed such an impairment of nerve power? I foresee the consequence of such a solution in the recognition of an actual action independent of that of the heart, and when facts lead to a correct induction there is no more reliable conclusion. In this point of view, the case under consideration is perhaps without a precedent, and the particular features of it are calculated to elucidate this subject of arterial pulsation, as no other physiological or pathological data are on record.

After one month of continued absence of pulse, the radial artery began to manifest some pulsation; and at the end of two months he was attacked with measles, in which excitement the arterial development of the affected arm seemed to participate, and the pulsation was more distinct than previously, and the eruption over the surface seemed to be as full as elsewhere. The sensation was somewhat restored along the inner portion of the arm as low as the elbow, but there was no sensibility to pinching or pricking or any other irritation along the forearm or hand, and there was no power of motion in any part of the limb at any time subsequent to the injury. The muscles were in a state of flaccidity, and the member had become diminished in size from want of use and deficient nutrition. Twelve months after the compression of the part the circulation was very deficient in pulsation, and it was thus

examined for dynamoscopic indications, when I found very little of that peculiar sound at the end of the fingers which was distinct and full on the sound hand. Here, then, was a case in which the weak circulation with scarcely a well-defined pulsation, was characterized by a deficiency of that peculiar sound at the ends of the fingers which is found to be well marked in the healthy state of the organism, and I take it, as very strikingly corroborating my view, that these sounds are caused by the propulsion of the blood through the capillary vessels in the extremities of the part examined. This limb was subsequently amputated as useless.

If we undertake a long brief analysis of the three cases, it will be noted that all were equally deprived of the power of motion; and hence, if muscular contractility was a *sine qua non* of these sounds, they should not have been observed in any of the cases. Yet they were perceptible in each, but most defective in the instance of impaired circulation, and seem there to bear a direct relation to the tone of the circulation.

This renders the subject of dynamoscopy of considerable importance, as affording a clue to the vital forces of the organism. And my own conviction is, that a close investigation of the bearings of this organic indication will conduct the medical inquirer to the most satisfactory information as to the power and capacities of the different subjects who require medical treatment.

Muriatic Acid in Scarlet Fever; Caution in regard to the Use of Calomel. By RICHARD MCSHERRY, M. D., of Baltimore, Md.—Some years ago, pending the preparation of the chlorine mixture as recommended by Dr. Watson, I gave to children affected with scarlet fever small doses, from one to three drops, of muriatic acid, largely diluted with water. I was more pleased with its effects than I ever had been with the chlorine mixture; and I have since continued to use it with the most gratifying success. The dilute acid is readily taken by children, and cleanses the throat effectually in its passage, thus superseding, to a great extent, the necessity for gargles, injections, &c. I give my little patients oranges to eat, and lemonade to drink, keep up faithfully a surface inunction, and use habitually little other medicine than the acid. It may be necessary to clear out the *primæ viæ* by an emetic or an aperient, or both; but I have long since given up the use of *purgatives* as not only improper, but very dangerous. A single dose of calomel may be well in the beginning, but no acids should be given with it, or should even follow it speedily. The physician must have forgotten the very *principia* of his profession, who would give muriatic acid, or chlorine in any form, with mercury; though Dr. Wood tells us he has heard of a fatal case where calomel and nitro-muriatic acid were given conjointly. The danger from the association of the vegetable acids with that drug is not so obvious, and may therefore be overlooked. But it has happened that the *vegetable acids* have converted calomel into a more dangerous form of mercury; and a fatal case is recorded merely from its being given in that very popular vehicle, currant-jelly. “Un enfant qui avait pris du calomel sur une tartine de gelée de groseilles, a succombé au bout de quelques heures à un empoisonnement par le bichlorure de mercure; en effet, par suite du contact de l'acide citrique contenu dans le gelée de groseilles, le protochlorure de mercure s'était transformé en bichlorure.” (Cited by M. Wahn.) The practical physician should not let such an instance as this escape his memory.

Experiments with Bibron's Antidote to the Poison of Reptiles. By E. M. WALKER, M. D., of Gonzales, Texas.—Believing that too much evidence